*Equity and
Excellence in
Education*

**Oakland**Schools

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|---|---|---|---|
| To: | Representative Brian Palmer House Education Committee | Date: | February 8, 2006 |
| From: | Vickie Markavitch Superintendent, Oakland Schools | RE: | Graduation Requirements |

Thank you for the opportunity to share some information and thoughts with you regarding the legislation you are drafting on high school graduation requirements. I and many others in the educational community recognize the importance of an increased standard of rigor in Michigan's high school and support the effort to standardize the practices and policies that many districts have had in place to this end.

While few can dispute the good intentions behind this legislative effort, many are concerned that the details of resulting legislation will not derail those intentions.

**One area of concern** is with the 2.0 grade requirement. Rigorous academic standards are the things we want students to know, understand and be able to do. Student mastery of those standards is the prime goal. Grades are not the only, and may not be the best, way to ascertain that mastery.

Dr. Doug Reeves, of Harvard University and the Center for Performance Assessment, has written extensively on the use of grades in schools. The attached graphs display the discrepancy between teachers' grades and success or failure on state assessments. The top chart shows the percentage of "A, B, or C' students that teachers predict would fail a state assessment (less than 10%). The bottom chart shows the percentage of "A, B, or C" students, from a group of 3,600 high school students, that actually did fail a state assessment (more than 40%). Grades are influenced by many factors and those factors are not standard from teacher to teacher.

State tests themselves are also not the only answer to determining a student's mastery of content standards. Enclosed with this memo are two examinations that assess mathematics through Algebra II level content – one assesses traditional Algebra II and one assesses content taught in an integrated mathematics program. This type of local assessment is a viable tool to use in determining what students know, understand and are able to do, and they are readily available in districts today.

**Another area of concern** is assurance that students will have more than one pathway to attainment of the more rigorous requirements. To achieve this we need to be careful not to call for completion of specific courses over mastery of content standards. Students learn differently – some will do fine with traditional courses in math and science; some

will do better with an integrated approach to this content; and some will need to experience practical application of this content to learn it well. Proficiency assessments rather than course credits will allow knowledge to be gained in a variety of settings.

One particular pathway along which a significant number of students thrive and learn is that of career/technical programs. Such programs offer practical application of the content standards for many academic areas – they offer the relevance for the rigor. But application takes more time than a typical 50-minute course period provides. Business and industry will tell you that most technical careers, including that of engineering, require hands-on practical experience to go with the theoretical.
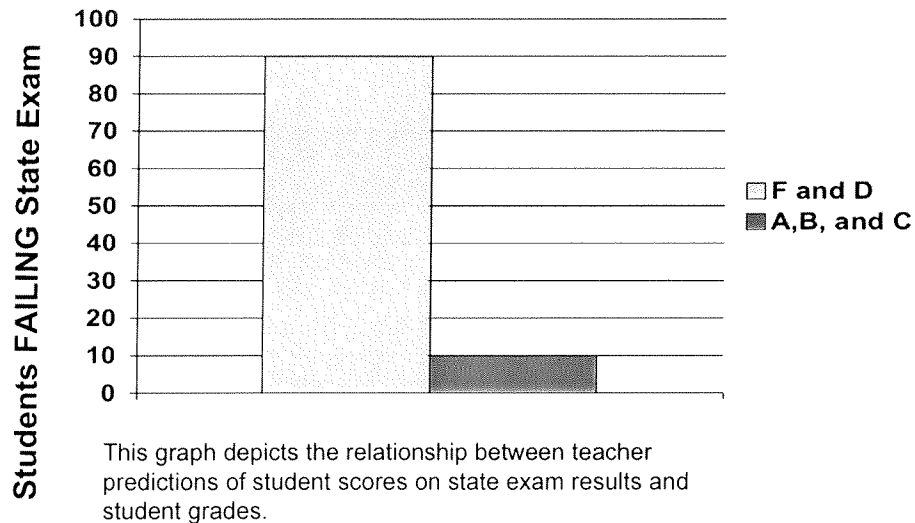
Allowing for that time in a typical high school day – one that allows a student to take only six or seven classes a year - is critical, especially in the junior and senior year of high school. For that reason, required credits from the state should not exceed 14 or 15 in number.

**On foreign language**, I, along with many others, support the House Bill that does not call for required foreign language requirements. Students need to have some choice relative to the arts, the technical world, and extended study in academic areas. If the goal of foreign language study is to create a bilingual American, two years of high school study will not do it. If it is to make Americans more globally aware and proficient, then study of world cultures through a good K-12 social studies curriculum will accomplish that much better than two years of foreign language study which will at best produce novice level language proficiency for a short period of time.

**Finally, on the setting of content standards**, I would strongly recommend a panel made up of representatives from the specific academic area of the content and from the business world in which that content is applied be added to the legislative and department of education members now named in the House Bill. These are important perspectives to add to such decisions in order to ensure the rigor we seek is sound and has relevance to the world in which it will be applied.
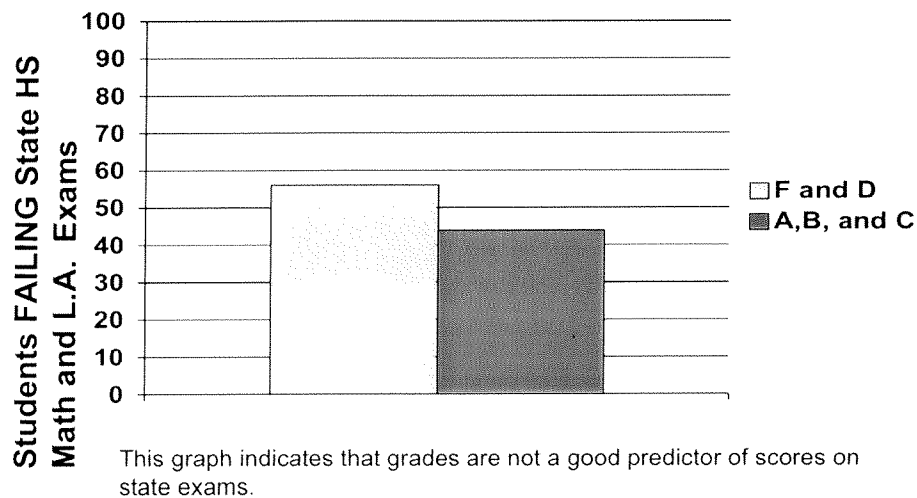
Thank you for your time and attention to these thoughts, your diligence to this task, and your commitment to Michigan's students.

## Predicted Relationship Between Grades and Exam Results

**Students FAILING State Exam**

100
90
80
70
60
50
40
30
20
10
0

☐ F and D
■ A,B, and C

This graph depicts the relationship between teacher predictions of student scores on state exam results and student grades.

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## Actual Relationship Between Grades and Exam Results (High School, n> 3,600)

**Students FAILING State HS Math and L.A. Exams**

100
90
80
70
60
50
40
30
20
10
0

☐ F and D
■ A,B, and C

This graph indicates that grades are not a good predictor of scores on state exams.

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# Local District Name

# Algebra II Assessment

Student Name:_____

# Algebra II District Final

Name: _____     Date: _____

1. Evaluate, if a = -1, b = 2, c = -3, d = 4

$$\frac{db + 4c^2}{2a}$$

2. Solve this inequality. Graph the solution set on the number line below.

$$|x - 6| \geq 3$$

3. Solve for x:

$$|2x - 20| = 14$$

4. Determine the slope of the line passing through the given pair of points. Simplify.
   (-1,4) and (-3, -2)

5. Find the slope-intercept form of an equation of a line passing through (-1,5) and (3,7).

6. Find the slope-intercept form of an equation. of a line having an x-intercept 2 & a y-intercept 1.

7. Solve the system of equations using substitution

$$x + y = 5$$
$$2x - y = 4$$

8. Solve the system using the elimination method

$$4x - 3y = -23$$
$$x + 7y = 2$$

9. Given f(x)= 2x-5 and g(x) = 5x²-3x+1, find
   a. f(-2)          b. g(1)          c. g(-3)

10. Simplify:  $\dfrac{-3x^{-4}yz^{-1}}{6x^{-1}y^{-1}z^{-1}}$

11. Factor completely: $15x^3y - 5xy^2$

12. Divide: $\dfrac{12xy^3 + 9x^2y^2 - 15x^2y}{3xy}$

13. Divide: $(8x^2 - 4x + 11) \div (x + 5)$

14. On the right side of this page, graph this equation: $x - 2y = -2$

This graph is for problem 14.
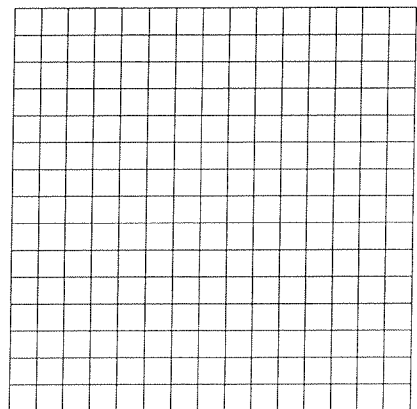
15. On the right side of this page, graph this inequality: $x + y > 3$

This graph is for problem 15.
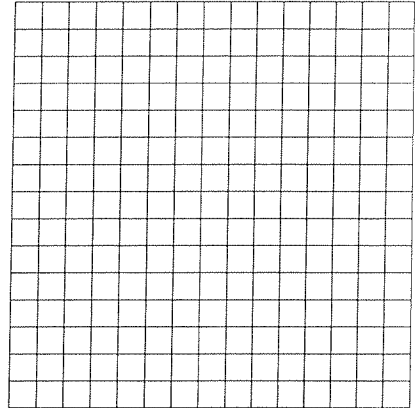
16. Graph this system of inequalities below. Name the coordinates of the vertices of the polygon formed. Then, find the maximum and minimum values of the given function.

$0 \le x \le 8$

$y \ge 0$

$y \le \dfrac{-1}{2}x + 8$

$f(x,y) = 2x - 5y$

Vertices:

( , )   ( , )      ( , )      ( , )

Maximum:

Minimum:

This graph is for problem 16.

17. Simplify $\sqrt[3]{8x^6y^4}$

18. Simplify $\sqrt{18x^3y} \cdot \sqrt{6x^2y^3}$
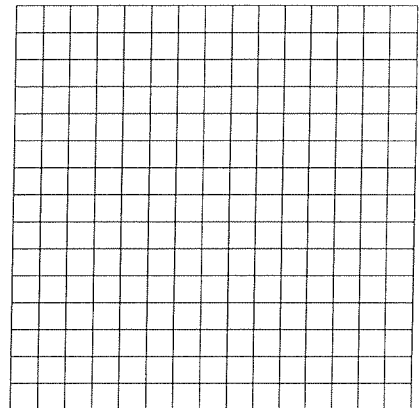
19. Simplify $(3+2i)(5-6i)$

20. Solve

$$12+\sqrt{2x+4}=20$$

21. Solve for x:

$$\log_1 8 = x$$

22. Solve for x:

$$\log_1 x = -3$$

23. Solve for x:

$$\log_1 x - \log_1(x-3) = \log_1 4$$

24. Solve for x:

$$x^2 - 2x - 8 = 0$$

25. Find the value of the discriminant and the nature of the roots for: $4x^2 - 6x - 5 = 0$

26. Solve using the quadratic formula:

$$x^2 - x - 12 = 0$$

27. Write a quadratic equation that these roots:

    1/3 and 2/3.

28. Write in the form $y = a(x - h)^2 + k$.

    <u>Show all steps.</u>    $y = x^2 - 2x + 2$

29. Name the vertex and the axis of symmetry equation for the graph of: $y = 2x^2 - 4x + 6$

Vertex:

Equation:

---

30. Solve this inequality. Indicate your solution set on the number line below.

$x^2 - 4x < 8$

$\longleftrightarrow$

---

31. Graph the equation. Plot at least 4 points, including the vertex.

$y = 2(x-3)^2 - 2$

This graph is for problem 31.
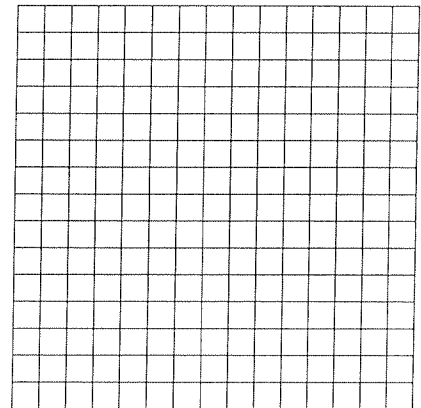
# Local District Name

# Integrated Mathematics II Assessment

Student Name:_____

# Unit 5: Coordinate Geometry and Quadrilaterals

## CALCULATORS SHOULD NOT BE USED ON THIS PORTION OF THE TEST

1. On your short answer sheet, draw the Quadrilateral Concept Map. Be sure to include the properties of the figures and the properties of the diagonals.

For questions #2-10 answer "A" for TRUE and "B" for FALSE. **Be sure to start your bubble sheet at #2.**

2. All rhombuses are squares.
3. Some parallelograms are rectangles.
4. All rectangles are squares.
5. If a quadrilateral is a kite, then that quadrilateral is a rhombus.
6. Every square is a rhombus.
7. If a quadrilateral is a parallelogram, then that quadrilateral is a rhombus.
8. In some kites, the diagonals are not perpendicular.
9. In all parallelograms, the diagonals are equal in measure.
10. In all parallelograms, the diagonals have the same midpoint.

Use A(3, -4) and B(7, -12) for questions #11 – 13.

11. Find the coordinates of M, the midpoint of $\overline{AB}$.

     a) M(6.5, -10)          c) M(-.5, 2)

     b) M(5, -8)            d) M(-2, 4)

12. Find the length of $\overline{AB}$.

     a) $AB = 4\sqrt{17}$        c) $AB = 5\sqrt{4}$

     b) $AB = 4\sqrt{5}$         d) $AB = \sqrt{410}$

13. Suppose B is the midpoint of $\overline{AC}$. Find the coordinates of C.

     a) C(17, -28)
     b) C(11, -20)
     c) C(11, 20)
     d) C(-1, 4)

14. Which rule represents a reflection over the y-axis?

   a) $P(x, y) \rightarrow P'(x, -y)$

   b) $P(x, y) \rightarrow P'(-x, -y)$

   c) $P(x, y) \rightarrow P'(-x, y)$

   d) $P(x, y) \rightarrow P'(y, -x)$
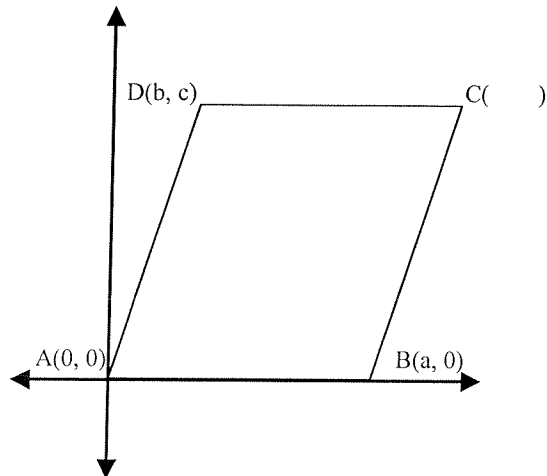
15. Which rule represents a reflection over the x-axis?

   a) $P(x, y) \rightarrow P'(x, -y)$

   b) $P(x, y) \rightarrow P'(-x, -y)$

   c) $P(x, y) \rightarrow P'(-x, y)$

   d) $P(x, y) \rightarrow P'(y, -x)$

16. Which rule represents a rotation of 180°?

   a) $P(x, y) \rightarrow P'(x, -y)$

   b) $P(x, y) \rightarrow P'(-x, -y)$

   c) $P(x, y) \rightarrow P'(-x, y)$

   d) $P(x, y) \rightarrow P'(y, -x)$

17. ABCD is a parallelogram in standard position. Fill in the missing coordinates.
    a) C(a, c)
    b) C(b, c)
    c) C(a + b, c)
    d) C(a + c, b)

**Name** _____

### SHOW ALL WORK FOR ALL THE FOLLOWING QUESTIONS
### NO CALCULATORS SHOULD BE USED ON THIS PROTION OF TEST

1. Place concept map for #1 here

# Unit 5: Coordinate Geometry and Quadrilaterals
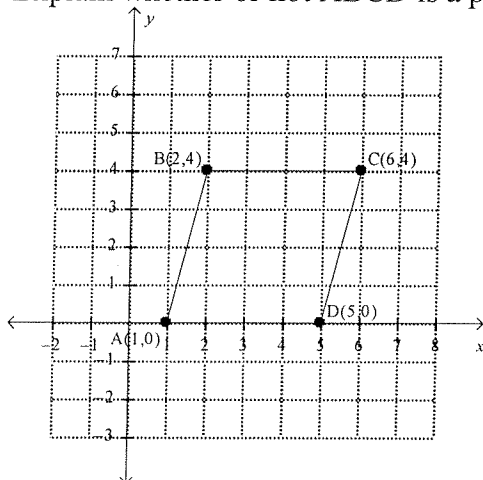
Quadrilateral ABCD has vertices A(-6, -1), B(-3, 8), C(10, 7), and D(7, -2). **Use this information to answer questions 18 – 22.**

18. Find the slope of each side of ABCD.

19. Find the length of each side of ABCD. Leave answers in simplified radical form.

20. Explain whether or not ABCD is a parallelogram. Be complete and very specific!



$$m\overline{AB} = 4 \qquad m\overline{DC} = 4$$

$$m\overline{BC} = 0 \qquad m\overline{AD} = 0$$

$$\overline{AB} \cong \overline{DC}$$

$$\overline{BC} \cong \overline{AD}$$

21. Given the information below, explain whether or not ABCD is a rhombus. Be complete and very specific!

| |
|---|
| $AB = 4.5$ |
| $BC = 5.38$ |
| $CD = 4.5$ |
| $DA = 5.38$ |

| |
|---|
| $m\overline{AB} = -2$ |
| |
| $m\overline{CD} = -2$ |
| |

22. Explain whether or not ABCD is a rectangle. Be complete and very specific!

| |
|---|
| $AB = 4.5$ |
| $BC = 5.38$ |
| $CD = 4.5$ |
| $AD = 5.38$ |

| | |
|---|---|
| $m\overline{AB} = -2$ | $m\overline{BC} = \dfrac{1}{2}$ |
| $m\overline{CD} = -2$ | $m\overline{AD} = \dfrac{1}{2}$ |

23. Quadrilateral DEFG has vertices D(0, 0), E(7.5, 0), F(10, 5), and G(4.5, 6). Show that the diagonals of DEFG are perpendicular and tell which type or quadrilateral this property makes DEFG.
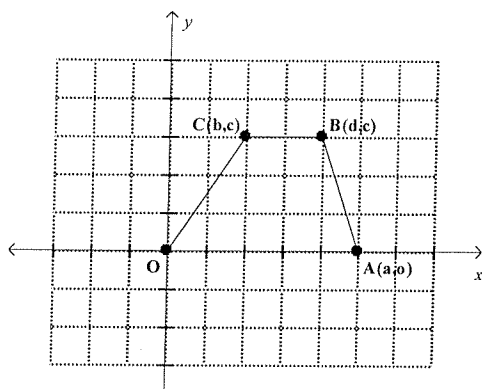
24. Draw a **rectangle** named ABCD in standard position with A at the origin and B on the x-axis. Label the other vertices correctly, and write the coordinates of the vertices using as **few** variables as possible.

25. Prove that Quadrilateral ABCD is a trapezoid. Be specific.



$$m\overline{OA} = 0 \qquad m\overline{AB} = \frac{c}{d-a}$$

$$m\overline{BC} = 0 \qquad m\overline{CO} = \frac{c}{b}$$

26. Quadrilateral ABCD has vertices A(-4, -3), B(7, 3), C(10, 12), and D(-1, 6). Find the midpoints of the diagonals of ABCD, tell what type of quadrilateral ABCD is, and explain why.

27.  $\triangle ABC$ has vertices A(-2, 1), B(6, 1), and C(6, -5).  M is the midpoint of $\overline{AB}$ and N is the midpoint of $\overline{BC}$ .  Find the coordinates of M and N.

28.  Show that $\overline{NM}$ is parallel to $\overline{AC}$ .  Provide a short explanation.

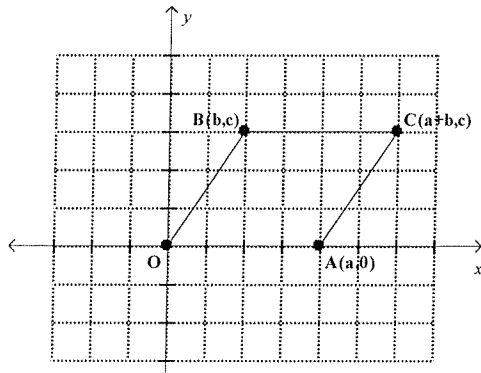29.  Show that $\overline{MN}$  is ½ the length of $\overline{AC}$ .

30. Draw non-right triangle ABC in standard position starting with A at the origin, and B on the x-axis. Make sure you label the other vertices correctly. Write the coordinates of the vertices using as few variables as possible.

Use the following diagram for #31 – 33



31. Find the lengths of $\overline{OA}$ and $\overline{CB}$.

32. Find the lengths of $\overline{OB}$ and $\overline{AC}$.

33. Based on your work from #31 and #32, you should be able to make a conclusion, or state a property, about parallelograms. What is that conclusion? **Be complete in your response.**"